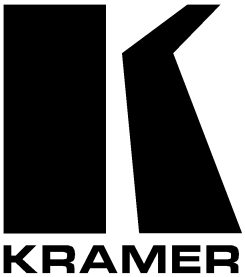
Kramer Electronics, Ltd.



USER MANUAL

VM-4HD

HD/SD – SDI Distributor

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1 Introduction

Welcome to Kramer Electronics (since 1981): a world of unique, creative and affordable solutions to the infinite range of problems that confront the video, audio and presentation professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 350-plus different models now appear in 8 Groups[1], which are clearly defined by function.

Congratulations on purchasing your Kramer **VM-4HD** *HD/SD - SDI Distributor*, which is ideal for:

- SDI production studios for signal distribution and equalizations
- Broadcast studios for on-air operation
- SDI field production
- Using with SDI video sources such a professional digital camera

The package includes the following items:

- **VM-4HD** *HD/SD - SDI Distributor*
- Power adapter (12V DC Input)
- This user manual[2]

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high performance high resolution cables[3]

1 GROUP 1: Distribution Amplifiers; GROUP 2: Video and Audio Switchers, Matrix Switchers and Controllers; GROUP 3: Video, Audio, VGA/XGA Processors; GROUP 4: Interfaces and Sync Processors; GROUP 5: Twisted Pair Interfaces; GROUP 6: Accessories and Rack Adapters; GROUP 7: Scan Converters and Scalers; and GROUP 8: Cables and Connectors

2 Download up-to-date Kramer user manuals from the Internet at this URL: http://www.kramerelectronics.com

3 The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com

3 Overview

The **VM-4HD** *HD/SD - SDI Distributor* is a high performance 1:4 distributor for all SDI video signals.

In particular, the **VM-4HD**:

- Accepts one input and distributes the signal to 4 identical outputs using BNC connectors
- Has a video bandwidth of 1.485GHz that allows it to be used for standard definition and high definition serial digital video signals (SD/HD-SDI)
- Is SMPTE 292M, 259M and 344M compliant and supports data rates of 143, 177, 270, 360, 540, 1483.5, 1485Mb/sec
- Provides automatic, multi-rate, equalization and reclocking for losses typical with long runs of 75Ω co-axial cable
- Has LOCK, HD and SD output indication LEDs
- Is rugged, dependable and is housed in a Kramer Tools sized enclosure, which makes it the smallest 1:4 SD/HD-SDI distributor

Achieving the best performance means:

- Connecting only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Avoiding interference from neighboring electrical appliances that may adversely influence signal quality and positioning your Kramer **VM-4HD** away from moisture, excessive sunlight and dust

4 Your VM-4HD HD/SD - SDI Distributor

Figure 1 and Table 1 define the **VM-4HD** *HD/SD - SDI Distributor*:

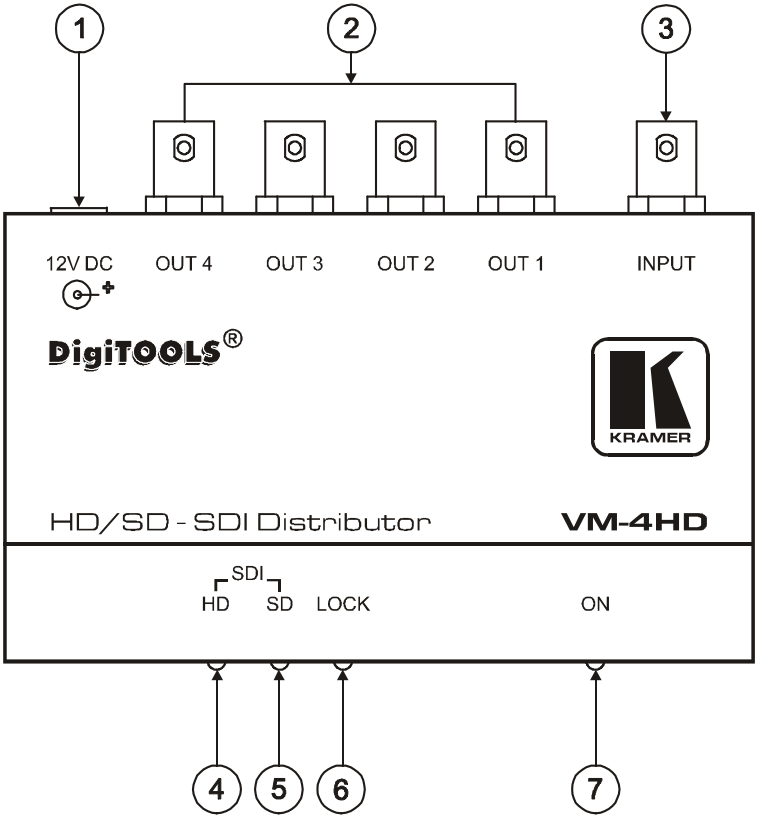

Figure 1: VM-4HD HD[1]/SD[2] - SDI Distributor

Table 1: VM-4HD HD/SD - SDI Distributor Features

#	Feature		Function
1	*12V DC*		+12V DC connector for powering the unit
2	*OUT* BNC connectors		Connects to the SDI acceptors (from 1 to 4)
3	*INPUT* BNC connector		Connects to the SDI source
4	*SDI*	*HD*[1] LED	Blue LED illuminates when the SDI signal is HD[1]
5		*SD*[2] LED	Green LED illuminates when the SDI signal is SD[2]
6	*LOCK* LED		Green LED illuminates when an SDI signal is locked
7	*ON* LED		Red LED Illuminates when receiving power

1 High Definition (HD) means a video format, consisting of either 720 active lines of progressive video or 1080 lines of either progressive or interlaced video

2 Standard Definition (SD) means an NTSC or PAL compatible video format, consisting of 480 (for NTSC) or 576 (for PAL) lines of interlaced video

5 Connecting the VM-4HD

To connect the **VM-4HD**, as the example in Figure 2 illustrates, do the following:

1. Connect a HD-SDI/SD-SDI video source (for example, a camera) to the INPUT BNC connector.
2. Connect up to[1] 4 video OUT BNC connectors to the appropriate HD-SDI/SD-SDI video acceptors (for example, displays).
3. Connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity.

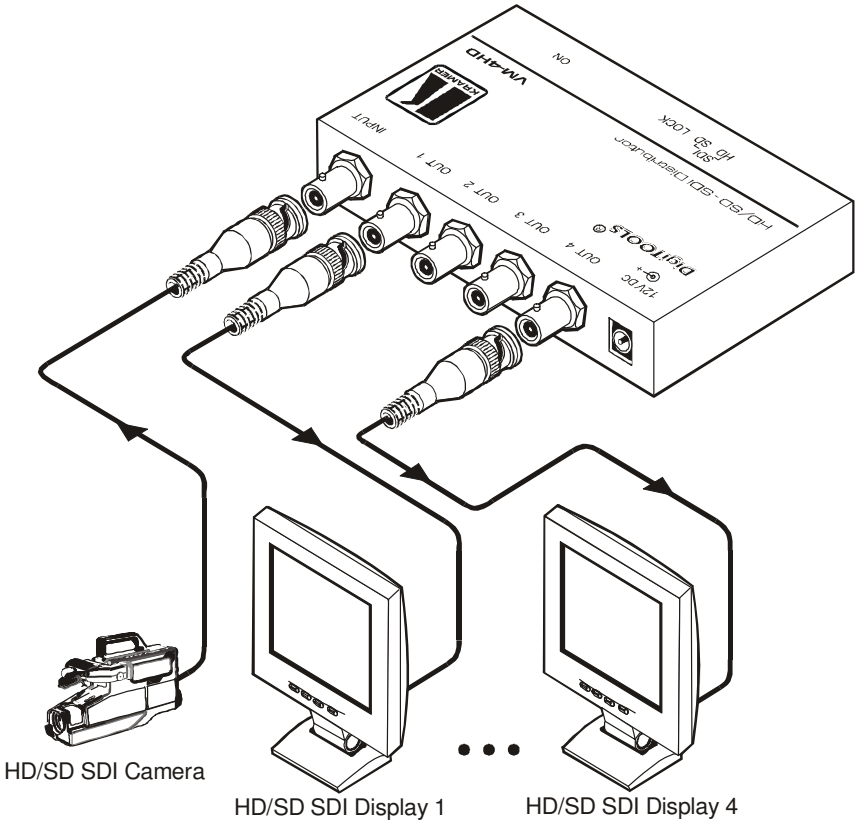

Figure 2: Connecting the VM-4HD HD/SD - SDI Distributor

1 When four outputs are not required, connect only those that are required and leave the other output(s) unconnected

6 Technical Specifications

Table 2 includes the technical specifications:

Table 2: Technical Specifications[1] of the VM-4HD HD/SD - SDI Distributor

INPUTS:	1 SMPTE-259M, 292M, 344M serial video, 75 ohms on a BNC connector
OUTPUTS:	4 equalized and reclocked SMPTE-259M, 292M, 344M outputs 75 ohms on BNC connectors
MAX. OUTPUT LEVEL:	800mVpp /75 ohms
BANDWIDTH (-3dB):	1.485GHz
COUPLING:	AC
POWER SOURCE:	12 V DC, 250mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7" x 2.95" x 0.98") W, D, H
WEIGHT:	0.3 kg (0.67 lbs.) approx.
ACCESSORIES:	Power supply, mounting brackets
OPTIONS:	19 inch rack adapters RK-T1 and/or RK-T3

1 Specifications are subject to change without notice

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for three years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed.
3. Damage, deterioration or malfunction resulting from:
   - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
   - ii) Product modification, or failure to follow instructions supplied with the product
   - iii) Repair or attempted repair by anyone not authorized by Kramer
   - iv) Any shipment of the product (claims must be presented to the carrier)
   - v) Removal or installation of the product
   - vi) Any other cause, which does not relate to a product defect
   - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.
NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.
This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC Rules and Regulations: Part 15: "Radio frequency devices Subpart B – Unintentional radiators"

CAUTION!

- ⌦ Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- ⌦ Use the supplied DC power supply to feed power to the machine.
- ⌦ Please use recommended interconnection cables to connect the machine to other components.

For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com, where updates to this user manual may be found.
We welcome your questions, comments and feedback.

Safety Warning:
Disconnect the unit from the power supply before opening/servicing.

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P/N: 2900-000062 REV 1